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(71) Applicant (for all designated States except US): EUROQUEST SOLUTIONS LIMITED [GB/GB]; Pentland House, Livingston EH54 6NG (GB).

(72) Inventor; and

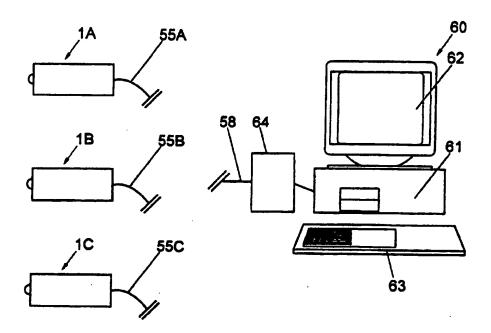
(75) Inventor/Applicant (for US only): REID, Atholl [GB/GB]; Euroquest Solutions Limited, Pentland House, Livingston EH54 6NG (GB).

(74) Agent: MURGITROYD & COMPANY; 373 Scotland Street, Glasgow G5 8QA (GB). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

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(57) Abstract

A front end unit (1) for use in an imaging system comprises a camera (10) to provide an image, a digitiser (20) to convert the image into digital data, a data processor (30) for manipulation and/or storage of the digitised image, and a modem (40) for rendering the digitised image suitable for transmission by telephone network. The camera, digitiser and data processor, and preferably the modem, are provided within a single housing (5). The elements are dedicated, enabling the housing to be made small. The unit is preferably suitable for connection direct to a telephone socket. A system including a remote host computer for receiving images from one or more front end units is also provided.

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IMAGING SYSTEM

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The present invention relates to an imaging system and especially to an imaging system including the transmission of images via a telephone network.

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The transmission of digitised information which 7 8 represents images, via a telephone network, is known 9 and is commonly performed. Such transmission typically involves a first sophisticated computer, equipped with 10 11 a modem, at a first end of a telephone line and a second sophisticated computer equipped with a modem, at 12 a second end of the telephone line. Where the aim is 13 to capture images in the vicinity of the first 14 computer, a video camera is typically connected to the 15 16 first computer and data representing images captured by 17 the camera are transmitted via the telephone line to the second computer. Systems are known in which 18 several cameras may be connected to the first computer 19 which may then transmit, via a modem, data representing 20 images from one or more of the cameras, to the second 21 22 In such systems additional hardware such as 23 multiplex units may be required for use with the first 24 computer.

According to a first aspect of the present invention .1 there is provided a front end unit for use in an 2 imaging system said front end unit comprising: camera 3 means to provide an image; digitisation means to 4 convert said image into digital data; data processing 5 means; modem means for rendering said digital data 6 suitable for transmission by telephone network, wherein 7 said camera means, said digitisation means and said 8 9 data processing means are provided within a single 10 housing. 11 12 Preferably, said modem means is also provided within 13 said single housing. 14 Preferably, said digitisation means is dedicated for 15 use in said front end unit. 16 17 Preferably, said data processing means is dedicated for 18 19 use in said front end unit. 20 21 Preferably, said modem means is dedicated for use in said front end unit. 22 23 24 Preferably, the camera means comprises a video camera. 25 26 Preferably, the front end unit includes data 27 compression means. 28 29 Preferably, the modem means comprises a modem for use with ISDN, PSTN or network telecommunications systems. 30 31 32 Preferably, the front end unit includes a transmitter for connection to a cellular telephone system or other 33 34 wireless telegraphy system. 35 36 Preferably, the data processing means includes a frame

3 1 grabber. 2 Preferably, the housing is not greater than about 15cm 3 4 by 15cm by 25cm in size. 5 Preferably, the front end unit includes two spaced 6 apart camera means each adapted to provide an image 7 from a slightly different view point, enabling a three 8 dimensional interpretation of the data provided by said 9 front end unit. 10 11 Preferably, the front end unit includes input means for 12 receipt of an image signal from a second or subsequent 13 front end unit, and at least one of the digitisation 14 means, data processing means and modem means acts upon 15 the image signal from the second or subsequent front 16 17 end unit. 18 According to a further aspect of the present invention 19 there is provided an imaging system including at least 20 one front end unit in accordance with the first aspect. 21 22 Preferably, the imaging system further includes a host 23 24 unit comprising a computer and a modem, said host unit being located remote from said front end unit and 25 adapted to communicate with the front end unit via a 27 telephone connection. Preferably, said host unit includes display means and

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is adapted for displaying images communicated from the front end unit.

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Preferably, the host unit includes data storage means 33 34 for storing data relating to images communicated from 35 the front end unit.

Preferably, the host unit includes means for 1 2 manipulating or analysing images. 3 Preferably, the host unit includes means for 4 selectively interrogating one of a number of front end 5 units by communicating with said selected front end 6 unit via a corresponding selected telephone connection. 7 8 Preferably, the front end unit is adapted to initiate 9 communication with the host unit in response to a 10 11 triggering signal, or alarm signal, generated in response to a stimulus in the vicinity of the front end 12 13 unit. 14 15 Preferably, the imaging system comprises: 16 a first front end unit in accordance with the 17 first aspect of the present invention, the first front end unit including input means for receipt of an image 18 19 signal from a second or subsequent ront end unit; 20 at least one second or subsequent front end unit, 21 in the vicinity of the first front end unit, without at 22 least one of a digitisation means, data processing means or modem means, and wherein the system is adapted 23 24 to relay images from the second or subsequent front end 25 unit to the host unit by utilising the digitisation 26 means, data processing means and/or modem means of the 27 first front end unit.

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According to a further aspect of the present invention, there is provided a method of stock control including: use of a plurality of spaced apart front end units in order to provide images from which stock levels in corresponding spaced apart areas can be determined.

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35 The method of stock control may further comprise use of 36 a remote host unit to selectively interrogate a first

- one of said plurality of front end units and to receive 1 one or more images from said selected front end unit 2 from which the stock level at the corresponding area 3 4 may be determined. 5 The method may further comprise using the host unit to 6 subsequently interrogate a second one of said plurality 7 of front end units and to receive one or more images 8 9 therefrom. 10 Preferably, the host unit runs stock control/ordering . 11 software simultaneously with software enabling the 12 interrogation of the front end units and interpretation 13 of data received from said front end units. 14 15 Preferably, the use of the host unit to interrogate a 16 selected front end unit comprises the host unit 17 18 initiating connection to the front end unit by selection of a telephone connection which corresponds 19 20 to the selected front end unit. 21 Embodiments of the present invention will be described, 22 by way of example, with reference to the accompanying 23 24 drawings in which: 25 26 Fig. la is a schematic illustration of an embodiment of a front end unit for use in an imaging system in 27 accordance with the present invention; 28 29 30 Fig. 1b is a front view of the front end unit of Fig. 31 la; 32 Fig. 2 is a schematic illustration of an imaging system showing three mutually remote front end units and one
- 33 34 host unit. 35

```
Fig. 3 is a schematic illustration of an alternative
  1
       embodiment, showing four camera units in the same
  2
       vicinity with shared data processing means and modem in
  3
       the same housing as one of the cameras;
  4
       Fig. 4a is a schematic illustration of an embodiment of
  6
  7
       a front end unit having two adjacent cameras;
  8
       Fig. 4b is a front view of the front end unit of Fig.
 9
10
       4a; and
11
      Figs. 5 and 6 provide technical details of embodiments
12
      of front end units in accordance with the present
13
14
      invention.
15
      With reference to Figs. la and 1b a front end unit 1,
16
      for use in an imaging system, comprises camera means in
17
      the form of a compact high-resolution colour video
18
19
      camera 10, digitisation means 20 for digitising the
20
      image provided by said video camera 10, data processing
21
      means 30 and modem means in the form of a dedicated
22
      modem 40, all housed in a compact housing 5.
      housing 5 is provided with a first aperture 6 at a
23
24
      first end thereof through which light may reach a lens
25
      12 of the video camera 10. The housing 5 is provided
      with a second aperture at the second end thereof which
26
27
      allows access to a socket 50 suitable for connection to
28
      a telephone line.
29
30
      The use of dedicated digitisation means 20, data
31
      processing means 30 and modem 40 enables these
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      components to be constructed such that they are
      extremely economical to produce and small in size.
33
      compact camera 10 is also used enabling the size of the
34
      front end unit to be restricted to approximately the
35
36
      same size as a conventional video camera.
```

Fig. 2 illustrates an imaging system having first, 1 2 second and third remotely located front end units 1A, 1B, 1C. The front end units 1A, 1B, 1C may be in 3 different cities or different countries and each is 4 connected to a respective telephone line 55A, 55B, 55C 5 via which connection to a telephone network can be 6 7 The system also includes a host unit, achieved. generally designated 60 comprising a host computer 61 8 having output means, for example in the form of a 9 display screen 62, input means, for example in the form 10 of a keyboard 63 and modem means 64 connected to a 11 telephone line 58 via which connection to a telephone 12 13 network can be achieved. The host unit 60 can be used to interrogate any of the front end units 1A, 1B, 1C 14 via the telephone network merely by accessing the 15 telephone line 55A, 55B, 55C corresponding to the 16 desired front end unit 1A, 1B, 1C. 17 Typically. therefore the host unit will have a database of 18 telephone numbers, each corresponding to a different 19 front end unit. The host unit 60 can be used to 20 21 manipulate the images received, for example enlarging 22 selected parts of said images. 23 24 The interrogation by the host unit may be high level as commands sent by the host unit can be interpreted by 25 the respective data processing means 30 in each front-26 27 end unit. The functions of the front end unit may thus 28 be controlled by the host unit, and the host unit may 29 also control front end mechanical devices (not shown), such as means for selectively orienting or adjusting 30 the position of said front end unit. 31

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It will be appreciated that the front end units 1A, 1B, 33 1C may be arbitrarily remote from each other and from 34 the host unit 60 provided that the host unit 60 and the 35 front end units 1A, 1B, 1C are connectable to a 36

telephone network. In a variation of this embodiment 1 one or more of the host unit and front end units may 2 include transmission means for wireless telegraphy of a 3 signal (such as is known from cellular telephone 4 technology) and may thus operate, and transmit or 5 receive images, in locations where no hard wired 6 7 telephone lines (or other image transmission lines) 8 exist. 9 Each unit also requires a source of electrical power 10 11 (not shown) and this will normally comprise connection 12 to electrical mains. However, portable or stand alone electrical power sources could be used, for example 13 14 batteries or electricity generating means. Thus one or more front end units may be fully portable. 15 The host 16 unit, for example in the form of a lap-top computer 17 connected to a cellular telephone network, may also be 18 fully portable. A fully portable host unit may be of 19 particular value in enabling mobile emergency services 20 to view a remote target area, such as the scene of a 21 fire or crime, while travelling to said area. 22 23 The embodiment illustrated in Fig. 2 provides an 24 economical way of providing video images from 25 arbitrarily spaced apart areas to a host unit user. 26 Furthermore, the front end units being small and self contained (except perhaps for power and telephone 27 28 connection lines) are easy to position, unobtrusive, 29 non-invasive, robust and interference-resistant. 30 31 An envisaged use for such a system is for stock control ` 32 in the circumstances where a supplier is responsible 33 for maintaining stocks of his product in a number of 34 retail establishments. One or more front end units 35 would be provided in the stock storage area of each 36 retail establishment and positioned so that the images

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provided show the level of stock of the supplier's 1 product in each establishment. The supplier can then 2 check the level of stock in each location from a remote 3 Stock control and ordering software could 4 be run on the host unit simultaneously with imaging 5 software and a user can therefore view the retailer 6 details, ideal stock levels etc as well as the image 7 showing the actual stock levels and, if required, 8 9 immediately requisition further stock. This system is much more efficient than a system requiring travel to, 10 and manual inspection of stock at, each retail outlet. 11 The enhanced efficiency would enable rapid recovery of 12 the capital expenditure involved in installing such a 13 14 system. 15

Embodiments of systems in accordance with the present 16 invention may be beneficially used in applications 17 other than stock control, and there are many 18 19 applications in which it is desirable to access visual 20 images from remote locations. Applications include: monitoring of industrial processes, for example in oil 21 and gas production; industrial line inspection; 22 security surveillance; fire monitoring; traffic and 23 motorway surveillance; automated telling machine 24 surveillance; customer monitoring; vision control and 25 26 personal property monitoring. The host unit may display images enabling a user to inspect the images 27 28 and decide on and initiate an appropriate course of 29 Alternatively, the host unit may run software to enable automatic analysis of the images and 30 initiation of data logging or action to be taken. 31 example a system having a suitably positioned front end 32 33 unit could be used to automatically recognise and log the registration details of all vehicles entering or 34 35 leaving a given area.

A variation of an embodiment of a system in accordance 1 with the present invention includes front end units 2 which, rather than waiting to be interrogated by the 3 host unit, initiate communication with the host unit 4 and transmission of images in response to a stimulus in 5 the vicinity of the front end unit. The stimulus may 6 be provided by, for example, a burglar alarm system, a 7 fire detection system, motion detection system etc. 8 The alarm or other means of providing stimulus could be 9 external to the front end unit or included as part of 10 11 the front end unit.

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A host unit may be provided with a number of telephone lines for simultaneous communication with a number of front end units. In this case the host system may use a split screen display to simultaneously display images from a number of front end units.

18

There are applications in which a number of cameras are 19 provided in close proximity. In such applications it 20 is possible to provide a number of front end units each 21 22 including a camera 10, digitisation means 20, data processing means 30 and a modem 40, and for some 23 24 applications (such as where damage to front end units is likely) the high level of redundancy that this 25 provides is desirable. In applications where such 26 redundancy is not required a cost saving can be 27 28 obtained by providing a number of front end units each 29 of which include a camera but which have some shared 30 components.

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Fig. 3 shows a first front end unit 101 including a camera 10, digitisation means 20, data processing means 30 and a modem 40. The first front end unit also includes a plurality of input sockets 108 enabling connection to second and subsequent front end units,

shown in the illustrated embodiment as second, third 1 and fourth front end units 101A, 101B, 101C. 2 second, third and fourth front end units 101A, 101B, 3 4 101C each include a camera 110A, 110B, 110C, digitisation means 120A, 120B, 120C and output means 5 125A, 125B, 125C for connection to the sockets 108 of 6 the first front end unit. The second, third and fourth 7 front end units 101A, 101B, 101C do not include data 8 processing means or a modem but instead rely upon these 9 elements of the first front end unit 101 for 10 transmission of images to a host unit (not shown). 11 12 Systems could include an arbitrary number of second and 13 14 subsequent front end units which rely upon components 15 housed in a first front end unit for image 16 transmission. The second and subsequent front end units could be provided without digitisation means, in 17 which case they would transmit analogue image signals 18 19 to the first front end unit for digitisation by the 20 digitisation means provided therein. 21 Although in the above description the camera means, 22 digitisation means, data processing means and modem 23 24 means have been described, for convenience, as separate 25 entities, it is of course possible for two or more of 26 these elements to be in the form of a single component. 27 For example, cameras which provide digital output could 28 be provided. 29 The data processing means may include a considerable 30 31 data storage capacity. This allows, for example, storage of images taken over an extended period, for 32 33 downloading to a host unit during a relatively short connection time. This enhances efficiency and allows 34 35 pre-event images to be retrieved even if it is only 36 decided that they are required after the event has

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1 This is of particular value in a system in occurred. which transmission of images is triggered by an alarm 2 (such as a fire alarm or security alarm) in the 3 vicinity of the front end unit, as it allows access to 4 images leading up to the event that triggered the 5 6 A preferred embodiment therefore comprises a front end unit in which images are constantly written 7 to memory. Stored images preferably include time, date 8 9 and/or camera location information. 10 11 Fig. 4a shows schematically a front end unit 401 having 12 first and second video cameras 410A, 410B within a single housing 405. The front end unit 401 includes 13 14 respective first and second digitisation means 420A, 420B for the first and second video cameras 410A, 410B. 15 16 The front end unit 401 also includes data processing 17 means 430 and modem means 440 to enable connection to a 18 telephone network. Fig. 4b shows a front view of the 19 front end unit 401. The objective lenses 412A, 412B of 20 the first and second video cameras 410A, 410B are 21 spaced apart by a fixed distance and thus provide 22 images from slightly different viewpoints. By using 23 known techniques this enables construction of a three 24 dimensional model of the images in the host unit (not 25 shown). 26 27 Figs. 5 and 6 provide details of technical data 28 relating to preferred embodiments of a front end unit. 29 30 Embodiments of the present invention provide a compact, 31 economical front end unit suitable for connection 32 direct to a telephone socket. This enables an imaging system, for transmission of images from a number of 33 34 arbitrarily distant front end units to an arbitrarily

distant host unit, to be provided extremely

economically with a minimum of hard-wiring. A desired

front end unit can be interrogated merely by selecting a corresponding telephone number from the host unit.

Modifications and improvements may be incorporated without departing from the scope of the invention, and elements hereinbefore described could be replaced by functional equivalents thereof.

1 CLAIMS

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- 1. A front end unit for use in an imaging system said
 4 front end unit comprising:
- 5 camera means to provide an image;
- digitisation means to convert said image into
 digital data;
- 8 data processing means;
- 9 modem means for rendering said digital data
- 10 suitable for transmission by telephone network, wherein
- 11 said camera means, said digitisation means and said
- data processing means are provided within a single
- 13 housing.

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- 15 2. A front end unit according to Claim 1, wherein
- said modem means is also provided within said single
- 17 housing.

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- 19 3. A front end unit according to either preceding
- 20 claim, wherein said digitisation means is dedicated for
- 21 use in said front end unit.

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- A front end unit according to any preceding claim,
- 24 wherein said data processing means is dedicated for use
- 25 in said front end unit.

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- 27 5. A front end unit according to any preceding claim,
- wherein said modem means is dedicated for use in said
- 29 front end unit.

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- 31 6. A front end unit according to any preceding claim,
- 32 wherein the camera means comprises a video camera.

- 34 7. A front end unit according to any preceding claim,
- 35 wherein the front end unit includes data compression
- 36 means.

- 8. A front end unit according to any preceding claim,
- wherein the modem means comprises a modem for use with
- 3 ISDN, PSTN or network telecommunications systems.

4

- 9. A front end unit according to any preceding claim,
- 6 further including a transmitter for connection to a
- 7 cellular telephone system or other wireless telegraphy
- 8 system.

9

- 10 10. A front end unit according to any preceding claim,
- wherein the data processing means includes a frame
- 12 grabber.

13

- 14 11. A front end unit according to any preceding claim,
- wherein the housing is not greater than about 15cm by
- 16 15cm by 25cm in size.

17

- 18 12. A front end unit according to any preceding claim,
- including two spaced apart camera means each adapted to
- 20 provide an image from a slightly different view point,
- 21 enabling a three dimensional interpretation of the data
- 22 provided by said front end unit.

23

- 24 13. A front end unit according to any preceding claim,
- 25 having input means for receipt of an image signal from
- 26 a second or subsequent front end unit, and wherein at
- least one of the digitisation means, data processing
- means and modem means acts upon the image signal from
- 29 the second or subsequent front end unit.

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- 31 14. An imaging system including at least one front end
- 32 unit according to any preceding claim.

- 34 15. An imaging system according to Claim 14, further
- 35 including a host unit comprising a computer and a
- 36 modem, said host unit being located remote from said

- front end unit and adapted to communicate with the
- 2 front end unit via a telephone connection.

3

- 4 16. An imaging system according to Claim 15, wherein
- 5 said host unit includes display means and is adapted
- for displaying images communicated from the front end
- 7 unit.

8

- 9 17. An imaging system according to either of Claims 15
- 10 or 16, wherein the host unit includes data storage
- 11 means for storing data relating to images communicated
- 12 from the front end unit.

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- 14 18. An imaging system according to any of Claims 15 to
- 15 17, wherein the host unit includes means for
- 16 manipulating or analysing images.

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- 18 19. An imaging system according to any of Claims 15 to
- 19 18, wherein the host unit includes means for
- 20 selectively interrogating one of a number of front end
- 21 units by communicating with said selected front end
- 22 unit via a corresponding selected telephone connection.

23

- 24 20. An imaging system according to any of Claims 15 to
- 25 19, wherein the front end unit is adapted to initiate
- 26 communication with the host unit in response to a
- 27 triggering signal, or alarm signal, generated in
- 28 response to a stimulus in the vicinity of the front end
- 29 unit.

- 31 21. An imaging system according to any of Claims 15 to
- 32 20, comprising:
- a first front end unit according to Claim 13;
- 34 at least one second or subsequent front end unit,
- in the vicinity of the first front end unit, without at
- 36 least one of a digitisation means, data processing

- l means or modem means, and wherein the system is adapted
- 2 to relay images from the second or subsequent front end
- 3 unit to the host unit by utilising the digitisation
- 4 means, data processing means and/or modem means of the

5 first front end unit.

6 7

- 22. A method of stock control including:
- 8 use of a plurality of spaced apart front end units
- 9 according to any of Claims 1 to 13, in order to provide
- 10 images from which stock levels in corresponding spaced
- 11 apart areas can be determined.

12

- 23. A method of stock control according to Claim 22,
- 14 further comprising use of a remote host unit to
- selectively interrogate a first one of said plurality
- of front end units and to receive one or more images
- from said selected front end unit from which the stock
- level at the corresponding area may be determined.

19

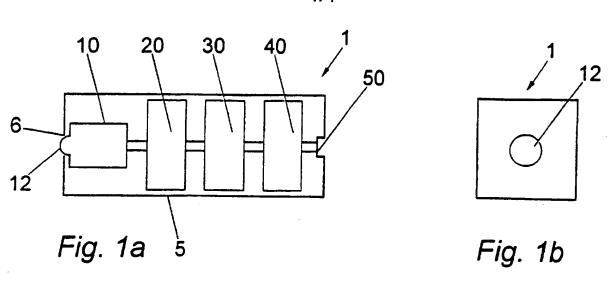
- 20 24. A method of stock control according to Claim 23,
- 21 further comprising using the host unit to subsequently
- 22 interrogate a second one of said plurality of front end
- units and to receive one or more images therefrom.

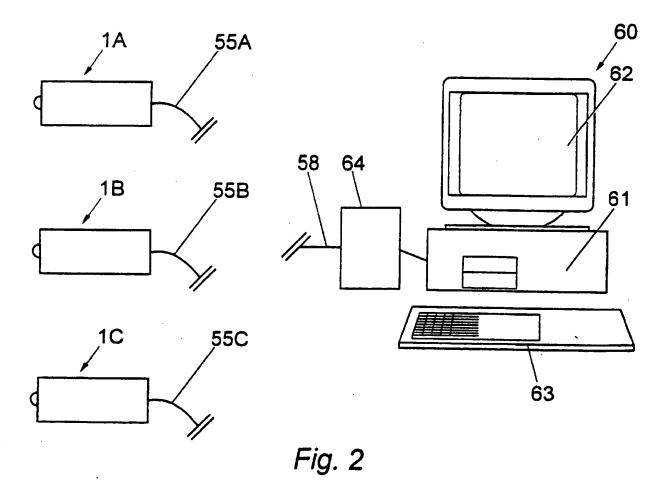
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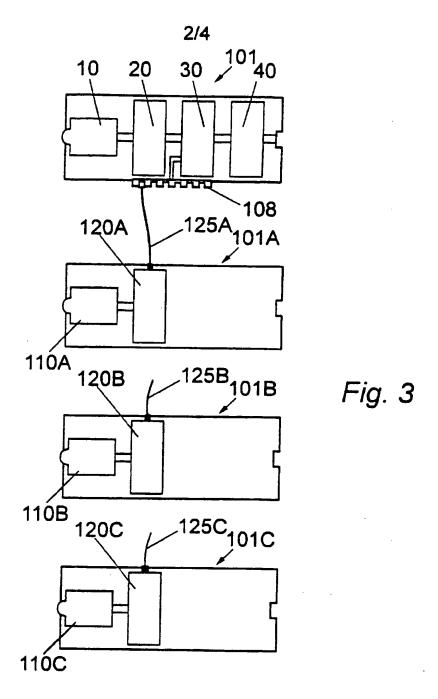
- 25 25. A method of stock control according to either of
- 26 Claims 23 or 24, wherein the host unit runs stock
- control/ordering software simultaneously with software
- enabling the interrogation of the front end units and
- 29 interpretation of data received from said front end
- 30 units.

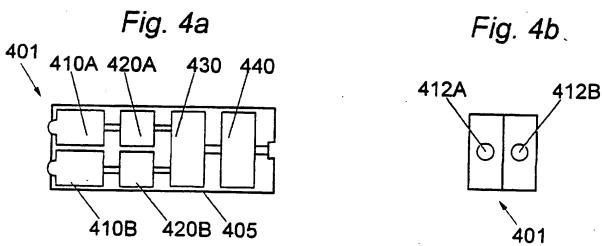
- 32 26. A method of stock control according to any of
- 33 Claims 23 to 25, wherein the use of the host unit to
- 34 interrogate a selected front end unit comprises the
- 35 host unit initiating connection to the front end unit
- 36 by selection of a telephone connection which

corresponds to the selected front end unit.









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Fig. 5

TECHNICAL SPECIFICATION

CAMERA MODULE		
Sensor Type	Colour CCD	
Image Sensor Area	Total Pixel	795(H) x 596(V)
Resolution	Effective Pixel	792(H) x 582(V)
, vesotution	Horizontal Vertical	470TV Lines
	vertical	580TV Lines
VIDEO CAPTURE MODULE		
Resolution		768(H) x 576(V)
Video Inputs	Six analogue inputs (six times CVBS or	1 33,0(1)
	three times Y/C, or combinations)	į
Video Output Format		
Video Memory		4:2:2 YUV, 16 Bit
12200 1.0201		512K x 16 Bits
CONTROLLER MODULE		
CPU	Am 188EM	B-bit controller
Program Memory	Flash Memory	512 x 8-bits
System RAM	SRAM	128 x 8-bits
Watchdog Timer	within the Am188EM	
	Automatically resets the microcontroller	
Serial Interface	CPU in case of hang up	i
Parallel Interface	For test and Diagnostics	1
Real Time Clock	Four inputs, four Outputs	
Man I I I I C C C C C C C C C C C C C C C	Date and Time information managed through a RTC device connected to a rechargeable	ł
	lithium battery.	
	RAM within the device	İ
Power Management	to reduce power consumption, a sleep	
•	module is provided which turns off power	
	to the Camera and Video Capture Modules.	
	When sleep mode is active, power is	
	automatically switched to the Camera	
	Video Capture Modules on receipt of an	
	incoming call or a change in condition of	
	one of the parallel inputs.	<u> </u>
COMMUNICATION MODULE		
ISDN	ISDN 2	128 Kbits/sec
	DSSI European Standard Protocol	120 KDIES/SEC
PSTN/PCMCIA module available		
Network/PCMCIA module		
KARITADIA		
POWER SUPPLY		
Supply Type	Switched Mode	
Outputs Provided		
Maximum Load	+5v, +12V, -12V	
	20 Watts	
STATIO DETAILS		
STSTEM DETAILS	20 Watts	
Power Requirements	20 Watts 120 V ac or 240 V ac	
	20 Watts	`
Power Requirements Power Consumption EXTERNAL CONNECTIONS	20 Watts 120 V ac or 240 V ac	·
Power Requirements Power Consumption EXTERNAL CONNECTIONS ISDN	20 Watts 120 V ac or 240 V ac Approximately 12 Watts maximum RJ45 Socket	
Power Requirements Power Consumption EXTERNAL CONNECTIONS	20 Watts 120 V ac or 240 V ac Approximately 12 Watts maximum	

Fig. 6

TECHNICAL SPECIFICATION

CAMERA MODULE Sensor Type Lange Sensor Area Resolution Resolution Lens Type Line Set Vitable Line Type Video Capture Module Resolution Video Inputs Six analogue inputs (six times CVBS or three times Y/C, or combinations) Tour Tyle Type Type Type Type Type Type Type Typ			
Image Sensor Area Resolution Resolution Lens Type VIDEO CAPTURE MODULE Resolution Video Inputs Video Inputs Video Output Format Video Hemory Video Hemory Video Hemory Video Forgram Hemory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Parallel Interface Parallel Interface Real Time Clock COMMUNICATION MODULE COMMUNICATION MODULE COMMUNICATION MODULE COMMUNICATION MODULE ISDN 2 DSSI European Standard Protocol COMMUNICATION MODULE ISDN 2 DSSI European Standard Protocol 128 Kbits/sec Handset dependent Video Hemory Switched Hode +5v, +12V, -12V 20 Watcs 120 V ac or 240 V ac 120 V ac or 240 V ac 1275 (V) 752(R) x 596(V) 752(R) x 596(V) 752(R) x 592(V) 758(H) x 592(V) 758(R) 768(H) x 576(V) 768(H) x 592(V) 768(H) x 576(V)			
Resolution Effective Pixel Horizontal Vertical Lens Type Vertical Integrated 4mm lens VIDEO CAPTURE MODULE Resolution Video Inputs Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Output Format Video Memory Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Memory Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Memory J2 bit Processor DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRAM		Colour CCD	1
Resolution Effective Pixel Horizontal Vertical Lens Type Vileo CAPTURE HODULE Resolution Video Inputs Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Hemory Video Hemory Video Hemory FORAM Inage Storage Watchdog Timer Parallel Interface Parallel Interface Real Time Clock COMMUNICATION MODULE COMMUNICATION MODULE COMMUNICATION MODULE COMMUNICATION MODULE Switched Hode Network module Network module available POWER SUPPLY Supply Type Outputs Provided Haxiawa Load Six malogue inputs (six times CVBS or three CVBS or three times Y/C, or combinations) 768(H) x 576(V) 768(H) x 572(H) x 582(V) 768(H) x 572(H) x 582(V) 768(H) x 582(V) 768(H) x 582(V) 768(H) x 572(H) x 582(V) 768(H) x 582(V) 768(H) x 572(H) x 582(V) 768(H) x 582(V) 768(H) x 572(H) x 582(V) 768(H) x 572(V) 768(H) x 572(Image Sensor Area	Total Pixel	795/B) - 596/B)
Resolution Lens Type Power Resolution Lens Type Resolution Lens Type Power Resolution Video Capture Hodule Resolution Video Inputs Six snalogue inputs (six times CVBS or three times Y/C, or combinations) 768(H) x 576(V) 7		Effective Pixel	752(B) X 396(V)
Lens Type Vertical Integrated 4mm lens SOTY Lines SOTY Lines	Resolution	1	
VIDEO CAPTURE MODULE Resolution Video Inputs Six snalogus inputs (six times CVBS or three times T/C, or combinations) Video Output Format Video Hemory Video Hemory CONTROLLER MODULE CPU Program Manory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Harimum Load STETEM DETAILS Power Requirements I Calc A module Network module available Power Requirements 120 V ac or 240 V ac Times CVBS or times CVBS or times CVBS or three times T/C, or combinations 768(H) x 576(V)			
VIDEO CAPTURE MODULE Resolution Video Inputs Six analogus inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Hemory CONTROLLER MODULE CPU Program Mamory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Forward Outputs Provided Harimum Load STETEM DETAILS Power Requirements ISD V ac or 240 V ac 120 V ac or 240 V ac 121 Six times CVBS or These CVBS or Three times CVBS or Three CVBS or T	Lene Type	·	580TV Lines
Resolution Video Inputs Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Memory CONTROLLER MODULE CPU Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS Power Requirements Six analogue inputs (six times CVBS or three imputs (six times continue)) 4.212 YUV, 16 Bit Six times (six times continue) 4.85 DX 4.85 D	20110 1791	Integrated 4mm Lens	
Resolution Video Inputs Six analogue inputs (six times CVBS or three times Y/C, or combinations) Video Output Format Video Memory CONTROLLER MODULE CPU Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS Power Requirements Six analogue inputs (six times CVBS or three imputs (six times continue)) 4.212 YUV, 16 Bit Six times (six times continue) 4.85 DX 4.85 D	VIDEO CAPTURE MODULE		
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Video Output Format Video Hemory Video Hemory CONTROLLER MODULE CPU Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCHCIA module Network module available POWER SUPPLY Supply Type Outputs Frovided Maximum Load STETEM DETAILS Power Requirements 120 V ac or 240 V ac 121 VIV. 16 Bit 1512K x 16 Bits 412:2 TUV, 16 Bit 512K x 16 Bits 412:2 TUV, 16 Bit 512K x 16 Bits 448 DX 44 M Bytes 44 M Bytes 16 GB, 4 GB 46 DX 44 M Bytes 16 GB, 4 GB 47 GB 48 DX 44 M Bytes 16 GB, 4 GB 48 DX 44 M Bytes 16 GB, 4 GB 48 DX 44 M Bytes 16 GB, 4 GB 48 DX 44 M Bytes 16 GB, 4 GB 48 DX 4			768(H) x 576(V)
Video Output Format Video Hamory CONTROLLER MODULE CPU Program Mamory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load A1212 YUV, 16 Bit 512K x 16 Bits 486 DX 4 M Bytes 4 M Bytes 4 M Bytes 1 CB, 4 CB 486 DX 4 M Bytes 4 M Bytes 1 CB, 4 CB 1 CB, 4	11000 Impace	Six manlogue inputs (six times CVBS or	·
CONTROLLER MODULE CPU Program Memory DRAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS POWER Requirements 120 V ac or 240 V ac A86 DX 486 DX 48 DETAILS 512 Case of hangue 1 CB. 4 CB 486 DX 48 DY 486 DX 486 D		three times Y/C, or combinations)	
CONTROLLER MODULE CPU Program Memory DRAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS POWER Requirements 120 V ac or 240 V ac A86 DX 486 DX 48 DETAILS 512 Case of hangue 1 CB. 4 CB 486 DX 48 DY 486 DX 486 D	W. L		
CONTROLLER MODULE CPU Program Mamory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available Switched Mode Outputs Provided Maximum Load SISTEM DETAILS Power Requirements 120 V ac or 240 V ac 132 bit Processor DARM 485 DX 485 D			4:2:2 TUV. 16 Bit
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CPU Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Four inputs, four Outputs Date and Time Information COMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Outputs Provided Maximum Load 32 bit Processor DRAM A M Bytes 4 M Bytes 1 GB, 4 GB 1			
Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock CUMMUNICATION MODULE ISDN PSTN/PCHCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load DRAM DRAM DRAM DRAM Hard Disk Automatically resets the CPU in case of hang up For test and Diagnostics Four inputs, four Outputs Data and Time Information 128 Rbits/sec Handset dependent Switched Mode +5v, +12v, -12v 20 Watts 120 V ac or 240 V ac			
Program Memory System RAM Image Storage Watchdog Timer Serial Interface Parallel Interface Real Time Clock ISDN ISDN ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load DRAM DRAM DRAM DRAM DRAM DRAM DRAM DRA			486 DX
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Watchdog Timer Serial Interface Parallel Interface Parallel Interface Real Time Clock CUMPUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Hard Disk Automatically resets the CPU in case of hang up For test and Diagnostics Four inputs, four Outputs Date and Time Information 128 Kbits/sec Handset dependent Switched Mode +5v, +12V, -12V 20 Watts 128 Kbits/sec Handset dependent		DRAM	
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Serial Interface Parallel Interface Real Time Clock CUMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS Power Requirements For test and Diagnostics Four inputs, four Outputs Date and Time Information 128 Kbits/sec Handset dependent Switched Mode +5v, +12V, -12V 20 Watts			
Parallel Interface Real Time Clock Four inputs, four Outputs Date and Time Information CUMPRUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available Network module available POWER SUPPLY Supply Type Outputs Provided Handset dependent Switched Mode +5v, +12V, -12V 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac	Serial Interfece		
Real Time Clock Date and Time Information CUMMUNICATION MODULE ISDN ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Handset dependent Switched Mode +5v, +12V, -12V 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac		tor test and Disamostics	1
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ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS Power Requirements 128 Rbits/sec 133.6 Rbits/sec Handset dependent Switched Mode +5v, +12V, -12V 20 Watts	Real lime Clock	Date and Time Information	
ISDN 2 DSSI European Standard Protocol PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided Maximum Load SISTEM DETAILS Power Requirements 128 Rbits/sec 133.6 Rbits/sec Handset dependent Switched Mode +5v, +12V, -12V 20 Watts			
PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided +5v, +12v, -12v 20 Watts SISTEM DETAILS Power Requirements 128 Kbits/sec 133.6 Rbits/sec Handset dependent Switched Mode +5v, +12v, -12v 20 Watts			
PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided +5v, +12V, -12V Haximum Load SISTEM DETAILS Power Requirements PSSI European Standard Protocol 33.6 Rbits/sec Handset dependent Switched Mode +5v, +12V, -12V 20 Watts	ISDN	ISDN 2	128 Ebits/sec
PSTN/PCMCIA module Network module available POWER SUPPLY Supply Type Outputs Provided +5v, +12V, -12V 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac		DSSI European Standard Protocol	110 10111111111111111111111111111111111
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POWER SUPPLY Supply Type Outputs Provided +5v, +12V, -12V 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac			
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Supply Type Outputs Provided +5v, +12V, -12V Haximum Load 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac	POWER SUPPLY		
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Maximum Load 20 Watts SISTEM DETAILS Power Requirements 120 V ac or 240 V ac			7
SISTEM DETAILS Power Requirements 120 V ac or 240 V ac			ľ
Power Requirements 120 V ac or 240 V ac		ZU WATES	1
Power Requirements 120 V ac or 240 V ac	STETEM DETAILS		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		120 V es es 240 V	
Approximately I7 Watts maximum			
	TOWER COMMUNICATION	Approximately 12 Watts maximum	
EXTERNAL CONNECTIONS	RETREMAT. COMMERCET CHES		
		71.00	
NO43 SOCKEE			
25 FIR D-Type Connector		23 Pin D-Type Connector	
7 Fin D-Type Connector [9 Pin D-Type Connector	
External Video 15 pin D-Type Connector	EXTERNAL Video	18 m/= D m g .	

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Internat Application No PCT/GB 97/01042

	SIFICATION OF SUBJECT MATTER		·
IPC 6	H04N7/14		
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According	to International Patent Classification (IPC) or to both national	classification and IPC	
	DS SEARCHED		
Minimum	documentation searched (classification system followed by class	afication symbols)	
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	NL - 2280 HV Rijswyk Td. (+31-70) 340-2040, Tx. 31 651 epa ni,	Was 4:	
	Fax: (+31-70) 340-3016	Van der Zaal, R	

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